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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/282,229	03/31/1999	ALESSANDRO FORIN	MS-77/5(1166	8320

22971 7590 03/30/2005

MICROSOFT CORPORATION
MICROSOFT PATENT GROUP DOCKETING DEPARTMENT
ONE MICROSOFT WAY
BUILDING 109
REDMOND, WA 98052-6399

EXAMINER

HO, ANDY

ART UNIT	PAPER NUMBER
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2194

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/282,229	FORIN ET AL.	
	Examiner	Art Unit	
	Andy Ho	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6,7,9-12 and 14-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,7,9-12 and 14-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed 2/3/2005.
2. Claims 1-2, 4, 6-7, 9-12 and 14-40 have been examined and are pending in the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The following terms lack antecedent basis:

- (i) the suspended (line 3 claim 21). Correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 4, 6-7, 9-12 and 14-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joy U.S Patent No. 5,761,670.

As to claim 1, Joy teaches a computer (client 102, Fig. 1) having a memory (memory 108, Fig. 1) storing computer-executable instructions supporting plural objects (objects 126, Fig. 1) and a mutation object (object class A, Fig. 2), said mutation object comprising:

a method for mutating (...the method pointer of the object is altered to point to the object-specific VFT..., lines 43-44 column 7) at least one object (object A-01, Fig. 2) of said plural objects dynamically during run-time (invoking method call during runtime, lines 4-14 column 7) to provide a new implementation within the one object (the object is being locked after the procedure, lines 5-50 column 7), wherein the one object (object A-01, Fig. 2) includes a first method (Global Lock1 method 216, Fig. 2) and a second method (Object Specific Lock2 method 260, Fig. 3) and a pointer (Lock(lock1) pointer 215, Fig. 2), and

wherein the method of mutating includes changing the pointer from identification of the first method to identification of the second method (...the method pointer of the object is altered to point to the object-specific VFT..., lines 43-44 column 7; pointer 215 changing from pointing Global Lock1 method 216 to Object Specific Lock2 method 260, Figs. 2-3).

Joy does not explicitly teach an interface having the pointer. However, Joy teaches (Fig. 2) the pointer is contained within the virtual function table 210 wherein the table contains pointers to all methods of the object (Fig. 2; lines 15-31 column 5). Therefore one of ordinary skill in the art would conclude that the virtual function table 210 is in fact the interface contains all of pointers to each method of the object.

As to claim 2, Joy as modified further teaches each one of said plural objects comprises: a V-table (virtual function table 210, Fig. 2), a V-table pointer (pointers within virtual function table 210, Fig. 2) pointing to said interface.

As to claim 4, Joy as modified further teaches the interface comprises a Mutate-object method (Global Lock1 method 216, Fig. 2).

As to claim 6, Joy as modified further teaches said mutation object mutates said V-table pointer so as to change the interface of the one object to a new interface corresponding to a new set of methods (...the method pointer of the object is altered to point to the object-specific VFT..., lines 43-44 column 7; pointer 215 changing from pointing Global Lock1 method 216 to Object Specific Lock2 method 260, Figs. 2-3).

As to claim 7, Joy as modified further teaches said mutation object is a Mutate-VTable method (Global Lock1 method 216, Fig. 2).

As to claim 9, Joy as modified further teaches said method of said mutation object is a Mutate-object method (Global Lock1 method 216, Fig. 2).

As to claim 10, Joy as modified further teaches state register (lock status indicator 249, Fig. 3) storing a state of said one object, and wherein said method of said mutation object changes the contents of said state register so as to mutate the state of said one object (changing the state from locked to unlocked or unlocked to locked, lines 4-50 column 7).

As to claim 11, Joy as modified further teaches said state register stores the value of a pointer of said one object (storing locking state of the object, lines 23-35 column 6).

As to claim 12, Joy as modified further teaches said pointer of said one object comprises a VTable pointer (pointers within virtual function table 210, Fig. 2).

As to claim 14, Joy as modified further teaches said mutation object comprises a Mutate-object method (Global Lock1 method 216, Fig. 2).

As to claim 15, Joy as modified further teaches mutation object further comprises a synchronization of the mutation of one of said plural objects with threads running in said one object (...synchronized methods are defined for the purposes of this document to be methods that include using a locking methodology so as to limit the number of threads of execution that can simultaneously use a system resource..., lines 41-54 column 4).

As to claim 16, Joy as modified further teaches the synchronization comprises mutual exclusion (lock on the object, lines 4-13 column 7).

As to claim 17, Joy as modified further teaches the mutual exclusion prevents new threads from accessing the object while other threads running in the object are permitted to finish (lock is arranged that only the thread that has possession of the lock for an object is permitted to execute a method on that object, lines 4-50 column 7).

As to claim 18, Joy as modified further teaches transactional synchronization (...synchronized methods are defined for the purposes of this document to be methods that include using a locking methodology so as to limit the number of threads of execution that can simultaneously use a system resource..., lines 41-54 column 4).

As to claim 19, Joy as modified further teaches transactional synchronization rolls back the threads currently running in the one object and then permits mutation of

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the object (...automatically be invoked to handle subsequent synchronization requests on this object..., lines 46-50 column 7).

As to claim 20, Joy as modified further teaches the synchronization comprises swizzling (...automatically be invoked to handle subsequent synchronization requests on this object..., lines 46-50 column 7).

As to claim 21, Joy as modified further teaches swizzling comprises suspending thread running in the object, modifying the states of the suspended and reactivating the thread (lines 20-54 column 9).

As to claim 22, Joy as modified further teaches thread states are swizzled between clean points whereby the thread becomes suspended at a clean point (lines 20-54 column 9).

As to claim 23, Joy as modified further teaches an interposition object (object of 249 and 260, Fig. 3) formed by said mutation object mutating a particular one (object A-01, Fig. 3) of said plural objects and a copied object (object class "Object", Fig. 3) at least nearly identical to said one particular object, particular object has a pointer to said copied object (pointer 217 to object class "Object", Fig. 3) and a method of interposition (methods of object A-01, Fig. 3) between threads seeking said one particular object and said copied object (...synchronized methods are defined for the purposes of this document to be methods that include using a locking methodology so as to limit the number of threads of execution that can simultaneously use a system resource..., lines 41-54 column 4).

As to claim 24, Joy as modified further teaches the interposition method comprises a filter (virtual function table 250, Fig. 3).

As to claim 25, Joy as modified further teaches the filter is a read-only filter (line 65 column 5 to line 10 column 6).

As to claim 26, Joy as modified further teaches filter provides access based upon the identity of the requesting thread (proving access to the object, lines 4-50 column 7).

As to claim 27, Joy as modified further teaches the copied object is a copy of the one particular object (one copy for object class "Object", Fig. 3).

As to claim 28, Joy as modified further teaches interposition object is formed by copying said one particular object and mutating the resulting copy while the copied object is the particular object (...Global Lock1 method creates a local object-specific locking procedure that includes as private data a local lock data subarray. Global Lock 1 also initializes the local lock data subarray by storing data representing the identity of the local owner thread in the lock data subarray and by clearing the NotRecentlyLocked flag. Additionally, the Global Local method creates an object-specific VFT for this object that references the object-specific locking procedure. Next, the method pointer of the object is altered to point to the object-specific VFT..., lines 33-44 column 7).

5. Claims 29-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joy in view of Lundin U.S Patent No. 5,339,430.

As to claim 29, Joy as modified does not explicitly teach the new implementation is a software update. Lundin teaches a system of binding software modules during runtime (Fig. 6) wherein the kernel 82 act as a mutation interface that receives a pointer from the software module 100 (pointer from class X_c of 100 to interface of kernel 82), and a pointer (pointer from kernel 82 to class X_c of 102) from kernel 100 to software module 102; the implementation corresponds to a software upgrade (updating of software, line 27 column 1). It would have been obvious to apply the teachings of Lundin to the system of Joy because this provides a linked procedure call mechanism for dynamically binding separately and simultaneously executable versions of software during operation of a computing system to allow transparent, uninterrupted updating of software as disclosed by Lundin (lines 23-27 column 1).

As to claim 30, Lundin further teaches new implementation is a higher speed driver (lines 23-39 column 1).

As to claim 31, Lundin further teaches new implementation comprises recently loaded code (code loaded from the new SW-UNIT 104, Fig. 6).

As to claim 32, Lundin further teaches new implementation comprises a different arithmetic algorithm (changing to a new software version, lines 40-42 column 1).

As to claim 33, Lundin further teaches the new implementation is a version of an algorithm (changing to a new software version, lines 40-42 column 1) where specific conditions are assumed to be true where the version is mutated back to a version when the conditions are no longer true (both of the old and new version of the software modules is presented during runtime, Fig. 6).

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As to claim 34, Lundin further teaches some of the parameters of the method are assumed to be constant (old parameter values, lines 42-43 column 9).

As to claim 35, Lundin further teaches the version is generated by a compiler through constant folding (lines 38-51 column 9).

As to claim 36, Joy as modified further teaches specific assumptions are made (pointers to the methods of the object, lines 15-31 column 5).

As to claim 37, Joy as modified further teaches the assumption is the location of an object (lines 15-31 column 5).

As to claim 38, Joy as modified further teaches the assumption is the value of a field of the state of the object (storing locking state of the object, lines 23-35 column 6).

As to claim 39, Lundin further teaches the version is generated through constant folding (lines 38-51 column 9).

As to claim 40, Lundin further teaches the version is generated through inlining (Fig. 6).

Response to Arguments

6. Applicant's arguments filed 2/3/2005 have been fully considered but are moot in view of the new ground(s) rejection.

Applicant's arguments presented issues which required the Examiner to further view the previous rejection. The Examiner conducted a further search regarding the issues mentioned in Applicant's response. Therefore, all arguments regarding the cited references of the previous rejection are moot in view of the new grounds of rejection.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy Ho whose telephone number is (571) 272-3762. A voice mail service is also available for this number. The examiner can normally be reached on Monday – Friday, 8:30 am – 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Any response to this action should be mailed to:

Commissioner for Patents


P.O Box 1450

Alexandria, VA 22313-1450

Or fax to:

- AFTER-FINAL faxes must be signed and sent to (703) 872 - 9306.
- OFFICAL faxes must be signed and sent to (703) 872 - 9306.
- NON OFFICAL faxes should not be signed, please send to (571) 273 – 3762

A.H
March 23, 2005


MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100